4 ECONOMIC BASE ANALYSIS

A. INTRODUCTION

Chapter 4 an analysis of socio-economic factors such as population, employment and establishment trends and wage rates, for Montgomery County and the New River Valley Region. For the purposes of this analysis, the Region has been defined as Floyd, Giles and Pulaski Counties as well as Radford City. It is important to note that Montgomery County has been omitted from the Regional data, except where noted. This has been done to create a direct comparison between the local and regional economic markets competing, on a certain level, for residential and commercial growth. The data were primarily collected from the Virginia Employment Commission and the US Department of Commerce.

B. POPULATION TRENDS

In 2000, Blacksburg has an estimated population of 39,663 residents (Table 4-1). This total represents an increase of 14.7% since 1990. In comparison, Montgomery/Radford (6.2%) and the New River Valley (5.1%) populations grew at a slower rate. It is important to note that the current Town estimate has been calculated using a formula derived by the Blacksburg Department of Planning and Engineering, while the other data has been calculated from estimates derived by the VEC. Consequently, the local data may be the result of a more aggressive estimate. However, this trend is consistent with the growth patterns between 1980 and 1990, where the Town outperformed the county and region in population growth.

In terms of annual population growth, Blacksburg has averaged nearly 2.0% growth over the past 20 years, compared to 1.2% for Montgomery/Radford and 0.7% for the New River Valley. This growth disparity is due primarily to the influence of Virginia Tech on the Town. Virginia Tech has steadily increased enrollment and employment levels since 1980 despite the fluctuations in the economic cycle. As a result, the employment market in the Town significantly more stable than the surrounding areas.

According to the Virginia Employment Commission and RKG Associates, population projections indicate that Blacksburg will not grow as fast as the two previous decades, but will continue to grow faster than the county and region. Based on assumptions made in *the Blacksburg Cost of Land Uses Study* prepared by RKG Associates for the Town of Blacksburg in 2001, population growth in Town will mirror student enrollment changes at Virginia Tech (see Chapter 6 of the Cost of Land Uses study for more detail). It is estimated that enrollment at Virginia Tech could increase by 5,000 students over the next decade. As a result, the Town population could potentially increase almost 15% by the year 2010 for a total of approximately 45,800. Although

population growth will slow after that due to enrollment stabilization, the Town population is projected to reach 47,700 people by 2020. It is important to note that these estimates are conservative. It would not be unreasonable for the Town population to reach 50,000 over the next 20 years if the enrollment assumption is correct and economic growth attracts new residents that are not associated with the school.

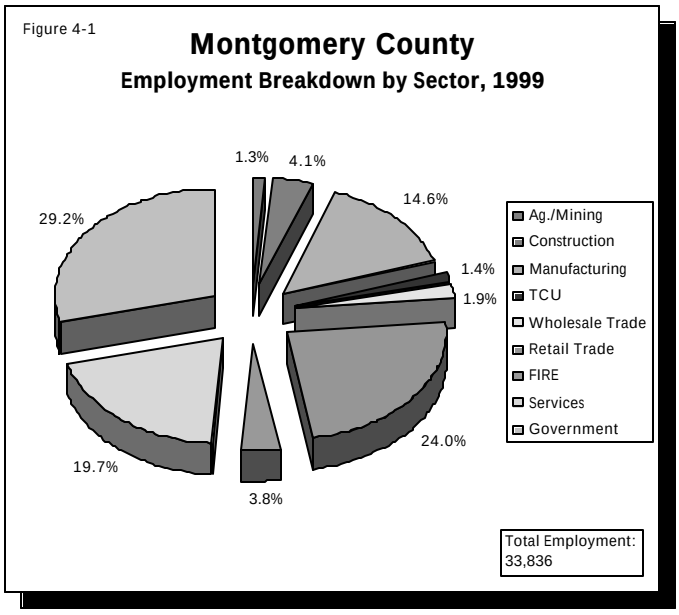
Table 4-1
Population Trend Comparison
By Jurisdiction, 1980-2010

Total Population	1980	1985	1990	1995	2000	2010
Blacksburg	28,514	31,552	34,590	36,400	39,663	45,800
Montgomery/Radford	77,232	81,824	90,052	91,260	95,598	100,702
New River Valley	141,912	145,920	152,976	154,428	160,784	167,910
Average Annual Change		'80-85	'85-'90	'90-'95	'95-'00	'00-'10
Blacksburg		608	608	362	653	614
Montgomery/Radford		918	1,646	242	868	510
New River Valley		802	1,411	290	1,271	713
Average Annual % Change		'80-85	'85-'90	'90-'95	'95-'00	'00-'10
Blacksburg		2.1%	1.9%	1.0%	1.8%	1.5%
Montgomery/Radford		1.2%	2.0%	0.3%	1.0%	0.5%
New River Valley		0.6%	1.0%	0.2%	0.8%	0.4%

Source: Town of Blacksburg; RKG Associates; VA Employment Commission; Woods & Poole, Inc., 1999

C. EMPLOYMENT TRENDS

Figure 4-1



Source: VA Employment Commission, 1999

Since the Virginia Employment Commission does not report employment data at the Town level, the consultants had to rely on County-level data to analyze these trends. Montgomery County had 33,882 jobs at the end of 1999 (Figure 4-1). This represents a 10.3% increase from the 1989 total. Private sector jobs (23,979) account for approximately 70% of that total, and 9,903 jobs (30%) are local, state or federal government positions. Montgomery County has the highest concentration of public sector employment, as a percentage of total employment, in the New River Valley. This can primarily be attributed to the influence of Virginia Tech, which accounts for over 6,000 state government positions. As Figure 4-1 reveals, the retail trade sector (8,123 jobs) comprised the largest share of employment in 1999, followed by service sector (6,689 jobs) and state government employment (6,661 jobs). The manufacturing (4,951 jobs)

sector constitutes a smaller, but significant share (14.6%) of the countywide total as well. The remaining sectors constitute the remaining 7,458 jobs, or 22.0%, of the County employment base.

Table 4-2
Employment Trends by Sector
Montgomery County (1989-1999)

INDUSTRY	1989	1999	'89-'99	'89-'99 % Change
Total	30,665	33,882	3,217	10.5%
Agriculture	176	370	194	110.2%
Mining	41	74	33	80.5%
Construction	1,170	1,381	211	18.0%
Manufacturing	7,947	4,951	(2,996)	-37.7%
TCU	258	482	224	86.8%
Wholesale Trade	305	634	329	107.9%
Retail Trade	6,762	8,123	1,361	20.1%
FIRE	1,081	1,275	194	17.9%
Services	3,563	6,689	3,126	87.7%
Total Private	**21,303**	**23,979**	**2,676**	**12.6%**
Governme nt - State	7,133	6,661	(472)	-6.6%
Government - Local	2,041	2,993	952	46.6%
Government - Federal	188	249	61	32.4%
Total Public	**9,362**	**9,903**	**541**	**5.8%**

Source: VA Employment Commission, 1989-1999
Note: FIRE – Finance, Insurance & Real Estate
TCU – Transportation, Communications & Utilities

Employment growth trends indicate that the Montgomery County employment base is shifting from a manufacturing and government focus to a more service, retail trade and government orientation. As seen in Table 4-2, the County had a net increase of 3,217 jobs between 1989 and 1999, but experienced significant shifts in employment concentration. The manufacturing sector experienced a loss of almost 3,000 jobs, constituting a 38% decline in employment. This radical shift can be directly attributed to a government downsizing of the Radford Army Ammunitions Plant in the early 1990s, which removed almost 2,800 jobs from that facility. Overall, these losses were offset by significant employment growth in the other sectors, especially the service (3,126 jobs) and retail trade (1,361 jobs) sectors. Despite the decline of state government employees, over 470 positions (6.6%) from the 1989 total, the government sector still experienced a 5.8% growth in total jobs. This is due to the significant employment growth in local government positions. In terms of percentage growth, the agriculture sector (110.2%) experienced the highest growth rate, followed by the wholesale trade (107.9%) and service (87.7%) sectors.

A more detailed breakdown from the Department of Commerce County Business Pattern data, by 2-digit industry classification, highlights the transition of the Montgomery County employment base. Table 4-3 reveals the top 5 industries that have experienced the largest growth and decline in employment between 1989 and 1997 (1999 data is not available). In terms of absolute change, the service sector experienced significant growth in several industries, especially business, health and engineering, accounting & research services. Wholesale trade-durable goods also ranked among the top 5 in net employment growth.

In contrast, the manufacturing sector experienced the most significant loss. The chemical & allied products industry lost approximately 2,800 jobs alone, almost 15 times more than the second largest loss total (transportation equipment, a 189 job decline). This radical shift is attributed to a government downsizing of the Radford Army Ammunitions Plant in the early 1990s. This location is currently being run by an independent contractor at a fraction of the original employment level. In addition to the losses in the manufacturing industries just mentioned, two other industries from this sector, the measuring, analyzing & controlling instruments and apparel & finished products from fabrics, also ranked among the top 5 in net employment decline.

Table 4-3
Top Employment Shift Trends, 1989-1997
By 2-Digit Industry Classification

SIC	Description	1997 Total	'89-'93	'93-'97	Change	% Change
	LARGEST GAIN IN TOTAL EMPLOMENT					
7300	BUSINESS SERVICES	133	270	225	**495**	234.6%
8000	HEALTH SERVICES	1,600	198	293	**491**	44.3%
5000	WHOLESALE TRADE - DURABLE GOODS	700	65	333	**398**	131.8%
8700	ENGINEERING, ACCOUNTING & RESEARCH SERVICES	745	153	198	**351**	89.1%
5800	EATING & DRINKING PLACES	2,892	461	(131)	**330**	12.9%
	LARGEST PERCENTAGE GAIN IN EMPLOYMENT					
7300	BUSINESS SERVICES	706	270	225	495	**234.6%**
7500	AUTOMOTIVE REPAIR, SERVICES & PARTS	281	68	113	181	**181.0%**
2400	LUMBER & WOOD PRODUCTS, EXCEPT FURNITURE	214	28	98	126	**143.2%**
5000	WHOLESALE TRADE - DURABLE GOODS	700	65	333	398	**131.8%**
3200	STONE, CLAY, GLASS & CONCRETE PRODUCTS	167	75	14	89	**114.1%**
	LARGEST LOSS IN EMPLOYMENT					
2800	CHEMICALS & ALLIED PRODUCTS	1,599	(2,240)	(550)	**(2,790)**	-63.6%
3700	TRANSPORTATION EQUIPMENT	587	(99)	(90)	**(189)**	-24.4%
3800	MEASURING, ANALYZING & CONTROLLING INSTRUMENTS	553	(90)	(78)	**(168)**	-23.3%
1700	CONSTRUCTION - SPECIAL TRADE CONSTRACTORS	491	(77)	(53)	**(130)**	-20.9%
2300	APPAREL, FINISHED PRODUCTS FROM FABRICS	176	(51)	(60)	**(111)**	-38.7%
	LARGEST PERCENTAGE LOSS IN EMPLOYMENT					
2000	FOOD & KINDRED PRODUCTS	35	(84)	(9)	(93)	**-72.7%**
2800	CHEMICALS & ALLIED PRODUCTS	1,599	(2,240)	(550)	(2,790)	**-63.6%**
2300	APPAREL, FINISHED PRODUCTS FROM FABRICS	176	(51)	(60)	(111)	**-38.7%**
6400	INSURANCE AGENTS, BROKERS & SERVICES	73	(36)	5	(31)	**-29.8%**
3700	TRANSPORTATION EQUIPMENT	587	(99)	(90)	(189)	**-24.4%**

Source: US Department of Commerce, 1989-1997

In terms of percentage change, there are several industries that have more than doubled since 1989. The service sector has two of the highest industry growth rates in business services and automotive repair, services & parts. Surprisingly, two smaller-sized manufacturing industries, lumber & wood products (except furniture) and stone, clay glass & concrete products, ranked among the highest in percentage growth despite the overall decline in the manufacturing sector. In fact, 4 of the top 5 industries for percentage decline are from the manufacturing sector (see Table 4-3).

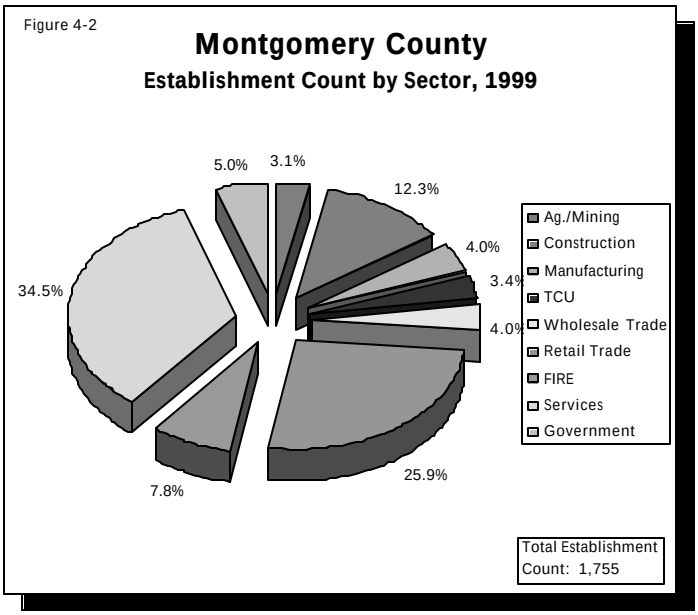
It is important to note that industries with less than 100 jobs were excluded from this analysis. Although tracking changes in these industries is important, their impacts on the regional economy is limited due to their relative size compared to the market. A more detailed summary of

employment changes, by industry, for all industries is included in the appendix section of this report.

D. ESTABLISHMENT TRENDS

In 1999, the County's economic base consisted of 1,755 business establishments, a 60.3% increase from the 1989 total of 1,095. This indicates a growth rate six times higher than the employment growth rate during the same period. As illustrated in Figure 4-2, the service (605 businesses) sector constitutes the largest share of total businesses for Montgomery County, followed by the retail trade (455 businesses) and construction (216 businesses) sectors.

Figure 4-2



Source: VA Employment Commission, 1999

Similar to employment growth, the service (235 businesses) and retail trade (143 businesses) sectors experienced the largest gains in establishment counts between 1989 and 1999. In fact, these two sectors comprise 57.3% of the overall County growth in establishments (see Table 4-4). The manufacturing and state government sectors both experienced gains in establishment (agency) count despite the loss of employment during this time frame. In terms of percentage growth, the agricultural sector (126.1%) experienced the highest growth rate. The transportation, communication & utility and wholesale trade sectors each experienced significant growth rates as well.

The disparity between establishment and employment growth is common throughout Virginia and the rest of the United States. Improvements in technology, especially computers and telecommunications, have allowed several industries to "downsize" their production processes while making their labor force more efficient. As a result, there has been an explosion of spin-off companies created by the "downsized" workers as well as a movement towards smaller, specialized companies that capitalize on more efficient production and communication techniques.

Table 4-4
Establishment Trends by Sector
Montgomery County (1989-1999)

INDUSTRY	1989	1999	'89-'99	'89-'99 % Change
Total	**1,095**	**1,755**	**660**	**60.3%**
Agriculture	23	52	29	126.1%
Mining	2	2	0	0.0%
Construction	154	216	62	40.3%
Manufacturing	45	71	26	57.8%
TCU	32	59	27	84.4%
Wholesale Trade	38	70	32	84.2%
Retail Trade	312	455	143	45.8%
FIRE	79	137	58	73.4%
Services	370	605	235	63.5%
Total Private	**1,055**	**1,667**	**612**	**58.0%**
Government - State	10	18	8	80.0%
Government - Local	25	56	31	124.0%
Government - Federal	5	14	9	180.0%
Total Public	**40**	**88**	**48**	**120.0%**

Source: VA Employment Commission, 1989-1999
Note: FIRE – Finance, Insurance & Real Estate, TCU – Transportation, Communications & Utilities

Table 4-5 highlights the top five industries that experienced the greatest growth and decline in employment between 1989 and 1997. In terms of absolute change, the service sector ranked high in several industries. Paralleling their employment growth, engineering, accounting & research services, business services and health services ranked amongst the highest in total establishment growth. Eating and drinking places also ranked among the top 5 in net establishment and employment growth.

Surprisingly, some retail trade sector industries experienced a net establishment loss between 1989-97 despite the strong performance of the entire sector. The automotive dealers & gasoline stores, building materials, hardware & garden supplies and apparel & accessory stores industries ranked the highest in net establishment loss (18 businesses total). Although this loss was offset by the growth in eating and drinking establishments, this trend indicates that there has been a significant growth of retailers over the past 3 years in Montgomery County. Some of the decline in establishments can be explained by the consolidation of certain retail operations as well as the presence of "big box" retailers and with their expanded merchandise lines.

Service sector industries also performed well in percentage growth changes, accounting for three of the top five growth industries. Interestingly, the manufacturing sector industry, measuring, analyzing & controlling instruments, experienced a growth rate of 150%, going from 2 to 5 businesses during the study period despite a net loss of 168 jobs. This is an example of the impacts of downsizing and spin-off on the local economy as discussed earlier. Due to the limited number of industries experiencing establishment loss in Montgomery County between 1989 and 1997, the same 5 industries that topped the net establishment loss list also ranked in the percentage loss category.

Table 4-5
Top Establishment Shift Trends, 1989-1997
By 2-Digit Industry Classification

SIC	Description	1997 Total	89-93	93-97	Change	% Change
	LARGEST GAIN IN TOTAL ESTABLISHMENTS					
5800	EATING & DRINKING PLACES	133	57	(1)	**56**	72.7%
8700	ENGINEERING, ACCOUNTING & RESEARCH SERVICES	82	30	17	**47**	134.3%
7300	BUSINESS SERVICES	72	11	26	**37**	105.7%
8000	HEALTH SERVICES	103	19	12	**31**	43.1%
6500	REAL ESTATE	55	17	(131)	**26**	89.7%
	LARGEST PERCENTAGE GAIN IN ESTABLISHMENTS					
3800	MEASURING, ANALYZING & CONTROLLING INSTRUMENTS	5	(1)	4	3	**150.0%**
8700	ENGINEERING, ACCOUNTING & RESEARCH SERVICES	82	30	17	47	**134.3%**
7300	BUSINESS SERVICES	72	11	26	37	**105.7%**
8200	EDUCATIONAL SERVICES	18	6	3	9	**100.0%**
6000	DEPOSITORY INSTITUTIONS	38	12	6	18	**90.0%**
	LARGEST LOSS IN ESTABLISHMENTS					
5500	AUTOMOTIVE DEALERS & GASOLINE STORES	58	(8)	(3)	**(11)**	-15.9%
5200	BUILDING MATERIALS, HARDWARE, GARDEN SUPPLIES	21	(9)	4	**(5)**	-19.2%
5600	APPAREL & ACCESSORY STORES	42	2	(4)	**(2)**	-4.5%
4800	COMMUNICATIONS	11	(2)	0	**(2)**	-15.4%
6300	INSURANCE CARRIERS	6	1	(2)	**(1)**	-14.3%
	LARGEST PERCENTAGE LOSS IN ESTABLISHMENTS					
5200	BUILDING MATERIALS, HARDWARE, GARDEN SUPPLIES	21	(9)	4	(5)	**-19.2%**
5500	AUTOMOTIVE DEALERS & GASOLINE STORES	58	(8)	(3)	(11)	**-15.9%**
4800	COMMUNICATIONS	11	(2)	0	(2)	**-15.4%**
6300	INSURANCE CARRIERS	6	1	(2)	(1)	**-14.3%**
5600	APPAREL & ACCESSORY STORES	42	2	(4)	(2)	**-4.5%**

Source: US Department of Commerce, 1989-1997

It is important to note that industries with less than 5 establishments were excluded from this analysis. Although tracking changes in these industries is important, their impacts on the regional economy is limited due to their relative size compared to the economy. A more detailed summary of establishment changes, by industry, for all industries is included in the appendix section of this report.

E. REGIONAL EMPLOYMENT COMPARISON

In 1999, the New River Valley Region (excluding Montgomery County) had a total employment base of 33,762 jobs, representing a 17.3% increase in employment from the 1989 figure. The manufacturing sector (12,604 jobs) comprises the largest portion of the region's employment total, followed by the retail trade (5,273 jobs) and services (5,028 jobs) sectors. In comparison to the County, the Region has experienced a higher employment growth rate (17.3%) between 1989 and 1999, but still accounted for less than half of the overall employment total for the New River Valley (67,644 jobs).

Table 4-6
Employment Comparison, 1999
Montgomery County vs. Rest of the New River Valley

INDUSTRY	Montgomery County	County Breakdown	Rest of NRV	Region Breakdown	County % of Region
Total	33,882	-	33,762	-	50.1%
Agriculture	370	1.1%	411	1.2%	47.4%
Mining	74	0.2%	20	0.1%	78.7%
Construction	1,381	4.1%	1,319	3.9%	51.1%
Manufacturing	4,951	14.6%	12,604	37.3%	28.2%
TCU	482	1.4%	1,503	4.5%	24.3%
Wholesale Trade	634	1.9%	1,139	3.4%	35.8%
Retail Trade	8,123	24.0%	5,273	15.6%	60.6%
FIRE	1,275	3.8%	663	2.0%	65.8%
Services	6,689	19.7%	5,028	14.9%	57.1%
Total Private	**23,979**	**70.8%**	**27,960**	**82.8%**	**46.2%**
Government - State	6,661	19.7%	2,158	6.4%	75.5%
Government - Local	2,993	8.8%	3,348	9.9%	47.2%
Government - Federal	249	0.7%	296	0.9%	45.7%
Total Public	**9,903**	**29.2%**	**5,802**	**17.2%**	**63.1%**

Source: VA Employment Commission, 1989-1999

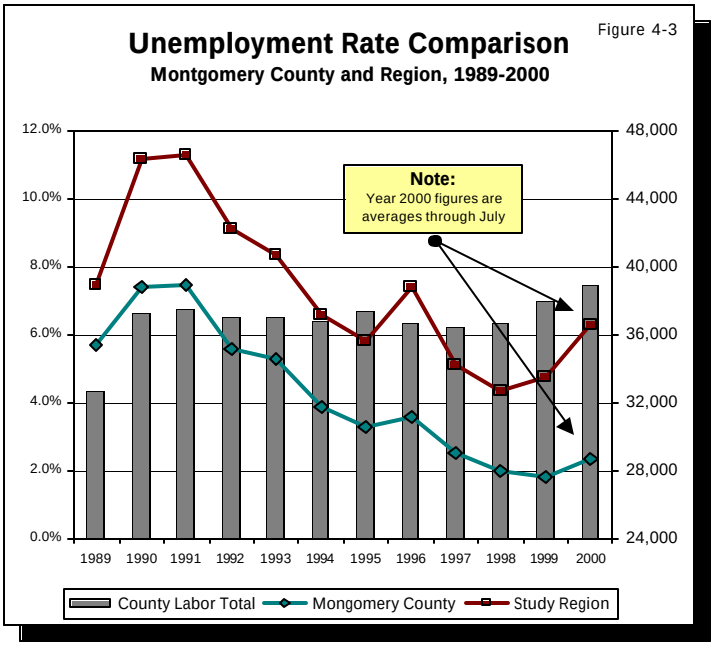
The data presented in Table 4-6 indicate significant differences in the employment breakdown for Montgomery County and the remainder of the New River Valley. While the County has a commercial, service and government orientation, the Region has a more industrial focus. The manufacturing sector comprises over 12,600 jobs in the Region, more than 2.5 times the County total. In addition, the manufacturing base accounts for a much larger portion of the Regional employment base (37.3%) than the County (14.6%). In contrast, the County has more jobs in the retail trade and service sectors (14,812 jobs total) than the Region (10,301 jobs total). In addition, the County has significantly higher concentrations (as a percentage of total employment) in these types of jobs as well (43.7% in the County, 30.5% in the Region).

The County also has more government positions, particularly in the state government sector. As stated earlier, the presence of Virginia Tech in Blacksburg disproportionately impacts these totals, giving Montgomery County over 75% of the total state government jobs in the New River Valley. Local and federal government employee totals have significantly different characteristics, with the Region having slightly higher totals in term of overall number (3,644 and 3,242 respectively) and percentage of total employment (10.8% and 9.5% respectively).

F. UNEMPLOYMENT & LABOR FORCE TRENDS

According to the Virginia Employment Commission, Montgomery County currently has 38,920 participants in the labor force, with an unemployment rate of 2.3%. In contrast, the New River Valley Region (less Montgomery County) has a labor force of 41,160 with an unemployment rate of 6.3%. This indicates that Montgomery County constitutes almost 50% of the total Regional labor supply while only encompassing 26% of the unemployed residents. Since 1989, the County labor force has grown 19.1%, over five times faster than the Region growth rate (3.5%).

Figure 4-3



Source: Virginia Employment Commission, 2000

As seen in Figure 4-3, Montgomery County has experienced a lower unemployment rate as compared to the remainder of the New River Valley. The data also reveal that the County is less impacted by fluctuations in the economic cycle. This is most evident in the early 1990s, where the Region experienced an increase of 50% in unemployment, or 3.8 points, between 1989 and 1991 while the County rate only increased 30%, or 1.8 points. In addition, the County unemployment rate returned to the 1989 level by the next year (1992). It took two additional years (1994) for the rest of the New River Valley to recover to those original levels. Currently, the County is experiencing an unemployment rate less than half of the 1989 total. In contrast, the region is also currently experiencing lower unemployment, but only 15% below the 1989 number.

G. WAGE TRENDS

Montgomery County had an average weekly wage rate of $519 in 1999. This represents an increase of $134, or 34.7%, from the 1989 average (not adjusted for inflation). The mining sector ($935) had the highest average weekly wage rate among all sectors in the County, followed by the manufacturing ($685) and government ($657) (Table 4-7). The retail trade and agriculture industry sectors had the lowest wage rate in Montgomery County. Although the mining sector has the highest average weekly wage, there is very limited opportunity to expand this sector in Montgomery County. In comparison, the Study Region had a slightly higher average weekly wage rate ($560) than the County in 1999. The transportation, communication & utilities (TCU) sector has the highest wage rate ($767) in the region, followed by manufacturing and wholesale trade. Similar to the County, retail trade wages were the lowest among all sectors in the Study Region.

Table 4-7
Average Weekly Wage Trends (Not Adjusted for Inflation)
By Jurisdiction, 1999

	Montgomery County				Study Region			
	1989	1999	Actual Change	% Change	1989	1999	Actual Change	% Change
Agriculture	$243	$290	$47	19.3%	$259	$407	$147	56.8%
Mining	$596	$935	$340	57.0%	$409	$531	$121	29.7%
Construction	$317	$483	$166	52.5%	$327	$487	$161	49.2%
Manufacturing	$457	$685	$228	49.9%	$438	$723	$285	65.1%
TCU	$375	$566	$191	50.8%	$560	$767	$207	37.1%
Wholesale Trade	$274	$503	$229	83.4%	$350	$702	$352	100.7%
Retail Trade	$191	$267	$76	39.8%	$185	$253	$68	36.9%
FIRE	$337	$530	$193	57.4%	$344	$505	$161	46.9%
Services	$317	$509	$192	60.7%	$337	$460	$123	36.5%
Government	$514	$657	$143	27.8%	$356	$524	$168	47.2%
TOTAL	$385	$519	$134	34.7%	$371	$560	$190	51.2%

Source: VA Employment Commission, 1990-2000

According to the Virginia Employment Commission, the Study Region's average weekly wage rate increased over 51% since 1989 (not adjusted for inflation), or more than 50% faster than the growth in Montgomery County. In fact, Montgomery County had a higher average weekly wage rate in 1989 than the Study Region. Currently, the Region has an 8% higher average rate ($560) than the County ($519). On a more detailed level, the wholesale trade sector experienced the largest wage rate growth between 1989 and 1999 in both Montgomery County (83.4%) and the Study Region (100.7%). Government sector wage rates only increased 27.8% in Montgomery County, while increasing almost 50% in the Region. Despite this fact, government employees in the County ($657) still have a higher average wage rate than government employees in the Region ($524) as well as the County average for all sectors ($519).

When compared to employment trends over the 10-year study period, it is apparent that Montgomery County has been losing higher paying manufacturing jobs and replacing them with lower paying service and retail jobs. Based on 1999 data, Montgomery County's service and retail industries pay weekly wages that are roughly 25% and 62% lower than the average weekly wage for manufacturing employees ($685/week).

H. OCCUPATIONAL SKILL LEVELS

Occupational information is measured by the function of a job, regardless of what industry it is in. This differs from the employment analysis earlier, which was a break down of employment by industry. For example, a receptionist position for a manufacturing firm would be classified as manufacturing in the industry-based system, while that same position at a law firm would be considered a professional service job. However, these two positions are considered the same under the occupational data presented below.

Unlike the industry data, the Virginia Employment Commission does not compile this information at the County level, but rather by Metropolitan Statistical Area (MSA). Unfortunately, Montgomery County and the New River Valley are not part of a defined MSA. As a result, RKG

Associates was forced to use a larger study area, the Southwest Region of Virginia, due to the limited availability of this data from the VEC. The data contain employment levels for several hundred occupational categories in the Region for 1996.

In order to simplify the analysis, the consultants grouped these occupational categories into six broad skill categories. The occupational grouping was subjective, based upon the consultant's common knowledge of typical occupational skill and educational requirements. The regrouped categories and their descriptions are as follows:

- Highly-Skilled White Collar (HSWC) - a professional position requiring a college degree, with supervisory/management responsibility or specialized training while working within a white-collar work environment.

- Highly-Skilled Blue Collar (HSBC) - a trade or nonprofessional position requiring supervisory/management responsibility, and a specialized school degree, certification, or other formal training while working within a blue collar environment.

- Semi-Skilled White Collar (SSWC) - a professional position requiring less than an advanced degree, but some post secondary education, a certificate, or specialized training or skill while working within a white collar work environment.

- Semi-Skilled Blue Collar (SSBC) - a trade position requiring less than an advanced or trade school degree but requiring some specialized training or skill, while working within a blue collar environment.

- Lesser-Skilled White Collar (LSWC) - a position within a white collar work environment requiring no degree or formal schooling beyond high school, but requiring some on-the-job training.

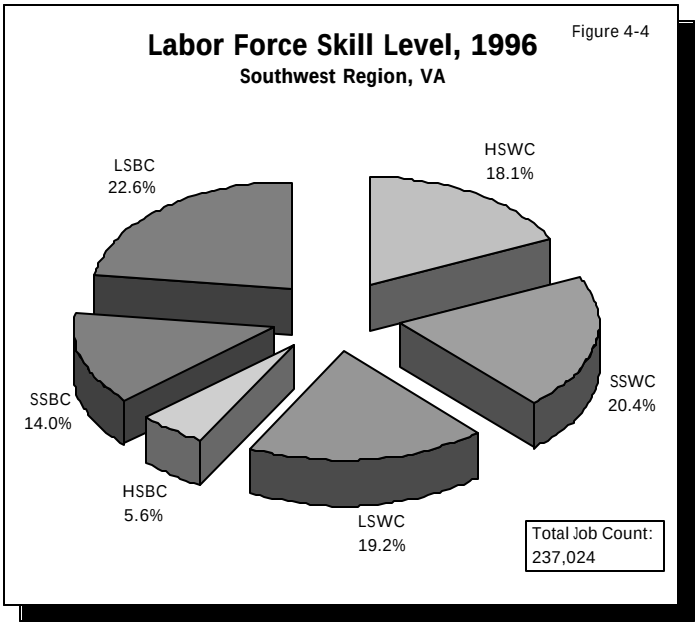
- Lesser-Skilled Blue Collar (LSBC) - a position within a trade profession requiring no advanced degree or formal schooling, but requiring some on-the-job training.

Although it is difficult to group occupational categories in this manner with great precision, the results provide some indication of the distribution and diversity of skills available within the labor force. According to the VEC, the Southwest Region of Virginia had an occupational employment level of 237,024 workers in 1996 (Figure 4-4).

The Region's occupational base was fairly evenly spread amongst the different skill groups. The largest single occupational skill group was lesser-skilled blue-collar workers (53,674 workers), which comprised nearly 23% of the occupational workforce. Major occupations within this skill group include Textile & Related Setters/Operators (13,837 workers), Transportation & Material Moving Machine Operators (11,636 workers) and Hand Labor & Material Moving Helpers (11,501 workers).

Semi-skilled white-collar workers make up the second largest skill group with more than 20% of the workforce. Cashiers, clerks, restaurant workers, and other similar occupations are included in this category. Over 18% of the workforce are classified as high skilled white collar, which includes managers and executives, lawyers, physicians and a wide variety of professional and technical workers. Approximately 42,878 workers were employed in this skill group in 1996. These are typically clean jobs that require people with administrative or professional work skills.

Figure 4-4



Source: Virginia Employment Commission, 2000

It is projected that high skilled and semi-skilled white-collar workers will drive the Southwest Virginia's economic future. According to the VA Employment Commission, the number of white-collar jobs will increase by 17,153, or 12.5%, over the next ten years (Table 4-8). In contrast, blue-collar jobs are projected to decline in number (4,723 jobs) by almost 5% over the same time frame. This shift in occupational employment is consistent with industry growth trends, since the largest employment growth sectors are service and retail trade and manufacturing employment declining. The data also indicate a stronger growth rate and higher concentration of semi- and high-skilled occupational employment. The demand for more qualified and capable labor is projected to increase, placing higher demand on educational facilities and training programs to effectively upgrade the labor force. Finding ways to attract, train, and keep these types of workers will be an important element of the Region's economic development strategy.

Table 4-8
Occupational Skill Demand Forecasts
Southwest Region, 1996-2006

	1996	2006	Change	% Change
High-Skilled White Collar	42,878	49,415	6,537	15.2%
Semi-Skilled White Collar	48,292	55,734	7,442	15.4%
Low-Skilled White Collar	45,530	48,704	3,174	7.0%
TOTAL	136,700	153,853	17,153	12.5%
High-Skilled Blue Collar	13,390	13,757	367	2.7%
Semi-Skilled Blue Collar	33,260	30,976	(2,284)	-6.9%
Low-Skilled Blue Collar	53,674	50,868	(2,806)	-5.2%
TOTAL	100,324	95,601	(4,723)	-4.7%

Source: VA Employment Commission, 1999

I. INDUSTRY EXPANSIONS AND CLOSURES

According to the US Department of Commerce County Business Pattern data, Montgomery County's manufacturing sector lost almost 2,950 jobs between 1989 and 1997. Nearly 2,800 jobs lost are attributable to the government downsizing at the Radford Army Ammunitions Plant (RAAP). If this job loss were removed from the trend data, the manufacturing sector would have produced a relatively stable employment trend between 1989 and 1997, experiencing a slight decline employment (158 jobs). Despite this fact, the total establishment count in the manufacturing sector has increased 50% since 1989, adding 23 new businesses. This indicates that the regional economy is experiencing a transition from a limited number of larger manufacturers to an expanding number of smaller manufacturing firms. In comparison, the remainder of the County's employment base has experienced a net increase of 3,091 jobs and 296 new businesses during this time period. The service sector accounts for a majority of this employment growth, totaling 1,799 new jobs.

The Virginia Economic Development Partnership (VEDP) tracks the announced expansions of existing facilities and the openings of new businesses for each County. Table 4-9 summarizes the records for Montgomery County over the past 10 years. As seen in the Table, the County has a total of 30 public announcements since 1990, totaling 2,859 new jobs and $174.9 million in capital investment. Six announcements (20% of the total) are for non-manufacturing openings and expansions, including 1,595 jobs (56% of the total) and $38.4 (22% of the total) million in capital investment. The most significant non-manufacturing announcement is the location of a back-office call center by EchoStar Communications Corporation in the Falling Brach Industrial Park (Christiansburg). This company announced in 2000 its plans to employ 1,400 people (nearly 50% of the total announced employment during the past 10 years) and contribute $16 million to the County tax base through capital investments.

The County's manufacturing sector experienced significant capital investment ($136.5 million) and employment growth (1,264 jobs) during the past decade. The most significant manufacturing announcement also occurred in 2000, with ACT MicroDevices locating a fiber optic component facility in Shell Building IV at the Blacksburg Industrial Park. The facility will employ approximately 300 workers and add $28 million to the local tax base in capital investment.

In terms of business closing announcements, the VEDP was only able to supply data for the past 3 years. In total, three Montgomery County businesses announced layoffs and one announced its' closing (women's clothing). In total, these companies announced the removal of 223 jobs, including all 63 jobs at the finishing plant. All of these firms are in the manufacturing sector. In contrast, a majority of the employment growth has come since 1997.

Table 4-9
Industry Openings, Expansions and Closings Announcements
Montgomery County, 1990-2000

Year	Expand/Open Announcements	Closing Announcements	Added Employment	Removed Employment	Capital Investment [1]
1990	1	-	24	-	$4.5
1991	0	-	0	-	$0.0
1992	3	-	65	-	$3.5
1993	1	-	30	-	$12.0
1994	6	-	180	-	$36.2
1995	3	-	225	-	$14.5
1996	3	-	110	-	$17.1
1997	2	-	80	-	$0.3
1998	4	2	100	153	$5.6
1999	4	1	320	10	$37.2
2000	3	1	1,725	60	$44.0
TOTAL	**30**	**4**	**2,859**	**223**	**$174.9**

Source: VA Economic Development Partnership and RKG Associates, Inc., 2001
[1] - In millions of dollars.

J. TARGET INDUSTRY STUDY SUMMARIES

There have been several different target industry analyses conducted for Montgomery County and the Fifth Planning District over the past 10 years. Each of these analyses addresses the competitive advantages of this region in Virginia, the current industry concentrations, and the industries most likely to capitalize on the resources and strengths of the region. Although some of these studies were prepared in the mid-1990s, they still represent a reasonable assessment of the region and provide meaningful findings. The remainder of this section briefly describes each report, including the methodologies used and the major findings.

1. An Economic Opportunities Analysis for the New River Valley

This report was prepared in March of 1994 by the Virginia Tech Economic Development Assistance Center for the New River Valley Planning District Commission. The study was intended to target industries that would bring the most benefits to the New River Valley while having a strong economic linkage to the region. Several factors were researched about all industries, including quality of the jobs created, economic benefits per dollar of sales, potential growth rate and international competitiveness. These factors were then weighted by the relative importance of each factor. The results produced a list of 29 industries that ranked the highest based on the minimum requirements

The study used three leading research methods to measure the economic value of the selected industries. First was the Impact Model for Planning, or IMPLAN, which generates a series of multipliers to use in an input-output model. In general, this method reveals the linkage, or how well the industry is matched with the economic conditions in the area, of each industry to the New River Valley. Second is the Virginia Impact Projection model, or VIP, which measures the fiscal impacts of each industry, including the change in value of public services and local

government budget demands. The third is the Northeast Economic Development System (NEEDS). This method estimates how attractive the region is to the selected industries.

Table 4-10 highlights the results for the top industries, as ranked by the screening process. Most of the highest scoring industries are from the manufacturing sector. The instruments & related products industry had strong representation, constituting 8 of the 22 industry groups. In addition, six of these eight groups ranked in the top 10 overall, based on the weighting scale. The transportation, communication & utilities (TCU) and service sectors also had industry sectors make the list. Health services (2), electric & electronic equipment, and machinery, except electrical constituted the remaining industry groups in the top 10.

Table 4-10
Identified Potential Target Industries
New River Valley

SIC	Industry	Rank	SIC	Industry	Rank
LUMBER AND WOOD			**INSTRUMENTS AND RELATED**		
2452	Prefabricated Wood Buildings	28	3822	Automatic Temperature Controls	1
2421	Sawmills & Planing Mills	29	3850	Ophthalmic Goods	2
CHEMICALS AND ALLIED			3829	Mechanical Measuring Devices	6
2824	Organic Fiber	22	3812	Search & Navigation Equipment	7
2869	Cyclic Crudes, Interm. & Ind. Chems.	27	3827	Optical Instruments & Lenses	9
RUBBER AND MISC. PLASTICS			3860	Photographic Equipment & Supplies	10
3053	Gaskets, Packing & Scaling	17	3841	Surgical & Medical Instruments	16
3080	Miscellaneous Plastic Products	26	3842	Surgical Appliances & Supplies	20
FABRICATED METALS			**COMMUNICATIONS**		
3443	Fabricated Plate Work	12	4890	Communications, Except Radio	18
3471	Plating & Polishing	14	**HOTELS AND LODGING SERVICES**		
MACHINERY, EXCEPT ELECTRICAL			7000	Hotels & Lodging Places	21
3543	Industrial Patterns	8	**HEALTH SERVICES**		
3545	Special Dies, Tools & Accessories	13	8050	Nursing & Protective Care	3
3599	Industrial Machines	15	8040	Doctors & Dentists	4
3562	Ball & Roller Bearings	19	8060	Hospitals	23
ELECTRIC AND ELECTRONIC EQUIPMENT			**EDUCATIONAL SERVICES**		
3674	Semiconductors & Related	5	8210	Elementary & Secondary Schools	11
TRANSPORTATION EQUIPMENT			8220	Colleges, Universities & Related	25
3713	Truck & Bus Bodies	24			

Source: Virginia Tech Economic Development Assistance Center, 1993.

In summary, the study suggests that the most beneficial employers for this region will be manufacturers and service firms in the information, technology, biological, medical, educational and research areas. The optimal firm will employ a relatively small number of workers, while making heavy investments in facilities, capital and technology.

2. Fifth Planning District Regional Cluster Analysis

ICF Consulting Economic Strategy Group presented this report to the Fifth Planning District Commission during the summer of 1999. The report addresses three major areas of target industry analysis. First, the report provides a regional economic condition analysis. The analysis includes a review of general population and job growth analysis, trends in income growth and a measure of total export value trends. Second, the report details the existing industry clusters in the Fifth PDC, providing an outlook on the potential for expanding these clusters in the future.

Last, the report highlights the economic strengths and weaknesses of the Fifth PDC, putting these findings into the context of future economic development for the region.

The existing cluster analysis identified several existing industry clusters in the Fifth PDC area. (listed in Table 4-11). These industries were selected based on their strong presence in employment. Each industry was then analyzed based on the employment breakdown within the industry to identify the most influential sub-industries. The report then presents the target industry's location quotient. Location quotients (LQ) are an indicator of "export" employment, or the above average concentration of jobs in a particular industry compared to a larger economy. In general, higher LQ scores indicate the presence of an industry cluster or concentration. Finally, the LQ scores were measured against average annual employment growth and then compared against similar regional markets. This was done to compare the historical competitiveness of the Fifth PDC region.

Based on the data presented, a few of the existing clusters have shown the most promise for continued development (also seen in Table 4-11). In summary, the Fifth PDC Region will most likely experience a transition from traditional manufacturing clusters to more technology dependent manufacturing and services.

Table 4-11
Identified Potential Target Industries
Fifth Planning District

Clusters	Expansion Potential
Apparel & Textiles	Low
Transaction Services	Medium
Wood Products	Low
Basic & Fabricated Metal	Low
Computer Services	Medium
Health Care	Medium
Opto-Electronics	High
Transportation-Related Mftg.	High
Transportation Services	Medium
Chemicals & Paints	Low

Source: RKG Associates, 2001

Although this report highlights the Fifth PDC District, these findings have some relevance for Blacksburg and Montgomery County. Important are the overlapping cluster recommendations between this report and the one previously discussed. Each report addresses the opto-electronic industry, medical service industry, and the transportation-related manufacturing industry. While this does not mean that there is a competitive advantage for the New River Valley in these target industries, it does indicate the possibility for a cross-regional recruitment effort.

K. CONCLUSIONS

Montgomery County has been experiencing fairly strong economic growth over the past decade. However, there is some reason for concern regarding the types of jobs that are being created. Over the past decade, Montgomery County has lost approximately 3,000 manufacturing jobs. During the same period, the County added approximately 3,100 service and 1,360 retail jobs, which pay on average, 25% to 62% less respectively than manufacturing jobs. This trend, if it continues, could continue to erode the weekly wage levels of local households.

Population trends indicate that the County, particularly Blacksburg, has been growing faster than the rest of the New River Valley for the past 20 years. According to the Virginia Employment Commission, this trend should continue over the next decade, resulting in significant demand for new housing development, employment, labor, and commercial/industrial development. Employment trends indicate that this expansion will most likely be in the service, retail trade and government sectors. As a result, there will be increased demand for workers with solid education

and skills, particularly in white-collar occupations. At a minimum, there will be an increased expectation for more comprehensive training and skill development. Fortunately, the proximity of Virginia Tech, Radford University and New River Community College will provide local residents the opportunity to develop their skills and continue their education. In summary, the data indicate that the local and regional markets should continue to prosper into the near future, but additional efforts are needed to enhance the quality and type of jobs created locally.